

# **CLASS EXERCISES**

State whether each equation represents inverse variation, joint variation, or combined variation.

1.  $xy = 2$

2.  $z = kxy$

3.  $y = \frac{x}{z}$

4.  $t = k\frac{r^2}{s}$

5.  $V = \frac{1}{3}\pi r^2 h$


6.  $F = kdg^2$

7. If  $z$  varies inversely as  $t$ , and  $t = 10$  when  $z = 4$ , find the constant of variation and write an equation for the variation.

8. If  $r$  varies inversely as  $s$ , and  $s = 4$  when  $r = 12$ , find  $s$  when  $r = 6$ .

9. If  $x$  varies jointly as  $y$  and the square of  $z$ , and  $x = 15$  when  $y = 5$  and  $z = 1$ , find  $x$  when  $y = 1$  and  $z = 2$ .

## **PRACTICE EXERCISES**

 Use technology where appropriate.

Does the data in the table suggest that  $y$  varies inversely as  $x$ ? If so, find the constant of variation and the equation.

1.

$x$	1	2	4	8	12
$y$	4	2	1	$\frac{1}{2}$	$\frac{1}{3}$

2.

$x$	50	25	20	10
$y$	2	4	5	10

State whether the formula expresses inverse variation, joint variation, or neither. State the constant of variation.

3.  $V = e^3$

4.  $24 = lw$

5.  $xy = 18$

6.  $p = 3s$

7.  $V = \pi r^2 h$

8.  $A = \frac{1}{2}bh$

In Exercises 9–12,  $y$  varies inversely as  $x$ .

9. If  $y = 4$  when  $x = 2$ , find  $y$  when  $x = 6$ .

10. If  $y = 8$  when  $x = 3$ , find  $y$  when  $x = 12$ .

11. If  $y = 20.4$  when  $x = -6.8$ , find  $x$  when  $y = 47.6$ .

12. If  $y = 82.0$  when  $x = 32.8$ , find  $x$  when  $y = 180.4$ .

In Exercises 13–16,  $x$  varies inversely as  $y^2$ .

13. If  $x = 4$  when  $y = 2$ , find  $x$  when  $y = 3$ .

14. If  $x = 6$  when  $y = 4$ , find  $x$  when  $y = 8$ .

15. If  $x = 42$  when  $y = 21$ , find  $y$  when  $x = 378$ .

16. If  $x = 72$  when  $y = 27$ , find  $y$  when  $x = 54$ .